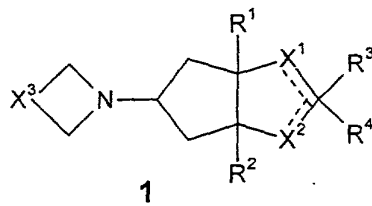


CLAIMS

1. A compound of the formula



or a pharmaceutically acceptable salt or solvate thereof wherein:

each dashed line in the above formula represents an optional double bond, provided both dashed lines do not simultaneously represent a double bond;

X¹ and X² are each independently selected from O and -(CH₂)_j- wherein j is 1 or 2, provided that no O is doubly-bonded to an adjacent atom;

X³ is -CH(R⁵)N(R⁸)CH(R⁶)-, -CH(R⁵)C(R⁸)(R⁹)CH(R⁶)-, -C(R⁵)=C(R⁸)CH(R⁶)-, or -CH(R⁵)C(R⁸)=C(R⁶)-;

R¹ and R² are each independently H, hydroxy, or C₁-C₆ alkyl;

or R¹ and R² are taken together as a bond;

each R³ is independently selected from -S(O)_jR⁷ wherein j is an integer ranging from 0 to 2, -C(O)R⁷, -OR⁷, -NC(O)R⁷, -NR⁷R¹², and the substituents provided in the definition of R⁷ other than H;

R⁴ is absent where the dashed line in the above formula 1 represents a double bond or R⁴ is selected from H and the substituents provided in the definition of R³;

or R³ and R⁴ are taken together with the carbon atom to which each is attached to form a 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group may be carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R¹¹)- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said cyclic group is saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R¹⁰ groups;

R⁵ and R⁶ are each independently selected from H and C₁-C₄ alkyl;

or R⁵ and R⁶ are taken together as -(CH₂)_q- wherein q is 2 or 3;

or R⁵ or R⁶ is taken together with R⁸ as defined below;

each R⁷ is independently selected from H, -(CH₂)_t(C₆-C₁₀ aryl) and -(CH₂)_t(4-10 membered heterocyclic), wherein t is an integer ranging from 0 to 5; 1 or 2 of the carbon atoms of said heterocyclic group optionally may be replaced with an oxo -C(O)- group; said aryl and heterocyclic R⁷ groups are optionally fused to a benzene ring, a C₅-C₈ saturated cyclic group, or a 4-10 membered heterocyclic group; the -(CH₂)_t- moieties of the foregoing R⁷

groups optionally include a carbon-carbon double or triple bond where t is an integer between 2 and 5; and the foregoing R⁷ groups, except H, are optionally substituted by 1 to 5 R¹⁰ groups;

R⁸ is selected from the substituents provided in the definition of R⁷ other than H;

5 R⁹ is selected from the substituents provided in the definition of R⁷;

or R⁸ and R⁹ are taken together with the carbon to which each is attached to form a 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group is carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R¹¹)- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R¹⁰ groups;

or R⁸ taken together with either R⁵ or R⁶ and the separate carbon atoms to which each is attached to form a fused 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group may be carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R¹¹)- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R¹⁰ groups;

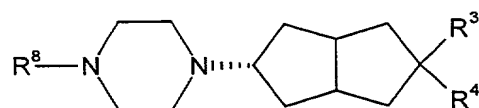
20 each R¹⁰ is independently selected from C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -OR¹¹, -C(O)R¹¹, -C(O)OR¹¹, -NR¹²C(O)OR¹¹, -OC(O)R¹¹, -NR¹²SO₂R¹¹, -SO₂NR¹¹R¹², -NR¹²C(O)R¹¹, -C(O)NR¹¹R¹², -NR¹¹R¹², -S(O)_j(C₁-C₆ alkyl) wherein j is an integer ranging from 0 to 2, -(CH₂)_m(C₆-C₁₀ aryl), -SO₂(CH₂)_m(C₆-C₁₀ aryl), -S(CH₂)_m(C₆-C₁₀ aryl), -O(CH₂)_m(C₆-C₁₀ aryl) and -(CH₂)_m(4-10 membered heterocyclic), wherein m is an integer ranging from 0 to 4; said C₁-C₁₀ alkyl group optionally contains 1 or 2 hetero moieties selected from O, S and -N(R¹²)- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said aryl and heterocyclic R¹⁰ groups are optionally fused to a C₆-C₁₀ aryl group, a C₅-C₈ saturated cyclic group, or a 4-10 membered heterocyclic group; and said alkyl, aryl and heterocyclic R¹⁰ groups are optionally substituted by 1 to 3 substituents independently selected from halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -NR¹²SO₂R¹¹, -SO₂NR¹¹R¹², -C(O)R¹¹, -C(O)OR¹¹, -OC(O)R¹¹, -NR¹²C(O)R¹¹, -C(O)NR¹¹R¹², -NR¹¹R¹², C₁-C₆ alkyl, -OR¹¹ and the substituents listed in the definition of R¹¹;

35 each R¹¹ is independently selected from H, C₁-C₁₀ alkyl, -(CH₂)_m(C₆-C₁₀ aryl), and -(CH₂)_m(4-10 membered heterocyclic), wherein m is an integer ranging from 0 to 4; said alkyl group optionally includes 1 or 2 hetero moieties selected from O, S and -N(R¹²)- with the

proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said aryl and heterocyclic R¹¹ groups are optionally fused to a C₆-C₁₀ aryl group, a C₅-C₈ saturated cyclic group, or a 4-10 membered heterocyclic group; and the foregoing R¹¹ substituents, except H, are optionally substituted by 1 to 3 substituents independently selected from halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -C(O)R¹², -C(O)OR¹², -CO(O)R¹², -NR¹²C(O)R¹³, -C(O)NR¹²R¹³, -NR¹²R¹³, hydroxy, C₁-C₆ alkyl, and C₁-C₆ alkoxy; and,

each R¹² and R¹³ is independently H or C₁-C₆ alkyl.

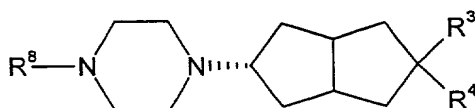
2. A compound according to claim 1 wherein said formula 1 has the following structure



- wherein R³ is -(CH₂)_t(C₆-C₁₀ aryl) or -(CH₂)_t(4-10 membered heterocyclic), R⁴ is H or hydroxy, and R⁸ is -(CH₂)_t(C₆-C₁₀ aryl) or -(CH₂)_t(4-10 membered heterocyclic), t is an integer ranging from 0 to 5, the foregoing R³ and R⁸ heterocyclic groups are optionally fused to a benzene ring, and said R³ and R⁸ groups are optionally substituted by 1 to 3 R¹⁰ groups.

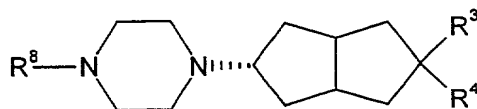
3. A compound according to claim 2 wherein R³ is a heterocyclic group fused to a benzene ring and, optionally, 1 or 2 of the carbon atoms of said heterocyclic group are replaced with an oxo -C(O)- group.

4. A compound according to claim 1 wherein said formula 1 has the following structure



- wherein R³ is -O(CH₂)_t(C₆-C₁₀ aryl) or -O(CH₂)_t(4-10 membered heterocyclic), R⁴ is H or hydroxy, and R⁸ is -(CH₂)_t(C₆-C₁₀ aryl) or -(CH₂)_t(4-10 membered heterocyclic), t is an integer ranging from 0 to 5, and the foregoing R³ and R⁸ groups are optionally substituted by 1 to 3 R¹⁰ groups.

5. A compound according to claim 1 wherein said formula 1 has the following structure



- wherein R³ and R⁴ are taken together with the carbon atom to which each is attached to form a 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group may be

carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R¹¹)- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said cyclic group is saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R¹⁰ groups; and R⁸ is -(CH₂)_t(C₆-C₁₀ aryl) or -(CH₂)_t(4-10 membered heterocyclic), wherein t is an integer ranging from 0 to 5 and said R⁸, R³ and R⁴ groups are optionally substituted by 1 to 3 R¹⁰ groups.

6. A compound according to claim 1 selected from the group consisting of

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-hexahydropentalene-2'-one;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-2'-phenyl-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-

hexahydropentalene-2-one, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-

hexahydropentalene-2-one;

(2'α,3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-hydroxy-5'-phenyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate salt;

(2α,3aβ,5α,6aβ)-5-Hydroxy-5-phenyl-hexahydro-pentalen-2-one;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(2-Methoxy-phenyl)-piperazin-1-yl]-2'-phenyl-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-1-pyrimidyl)-piperazin-1-yl]-2'-(4-fluoro-phenyl)-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-2'-(4-fluoro-phenyl)-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-2'-(4-fluoro-phenyl)-octahydro-pentalen-2'ol, maleate salt;

(2'α, 3'aβ, 6'aβ)-1-(4-Fluoro-phenyl)-4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-piperazine dihydrochloride;

(2'α, 3'aβ, 6'aβ)-5-Fluoro-2-[4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-

piperazin-1-yl]-pyrimidine maleate;

(2'α,3'aβ,6'aβ)-2-Fluoro-4-[4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-

piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 6'aβ)-2-Fluoro-4-[4-[5-(2-methoxy-phenyl)-1',2',3',3'a,4',6'a-hexahydro-

pentalen-2'-yl]-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 6'aβ)-1-Phenyl-4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-piperazine, dimaleate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-(4-Fluoro-phenyl)-4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazine, dihydrochloride;

5 (2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

10 (2'α, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazine, maleate;

(2'α,3'aβ,5'α,6'aβ)-5'-Hydroxy-5'-(2-trifluoromethyl-phenyl)-hexahydro-pentalen-2'-one;

(2'α,3'aβ,6'aβ)-5'-(2-trifluoromethyl-phenyl)-3,3a,4,6a-tetrahydro-1H-pentalen-2'-one, ethylene ketal;

15 (2'α,3'aβ,5'α,6'aβ)-5'-(2-Trifluoromethyl-phenyl)-hexahydro-1H-pentalen-2'-one, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-5'-(2-Trifluoromethyl-phenyl)-hexahydro-1H-pentalen-2'-one;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-[5'-(2-trifluoromethyl-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl]-benzonitrile, maleate;

20 (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-[5'-(2-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-[5'-(2-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl]-pyrimidine, maleate;

25 (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-[5'-(3-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-[5'-(4-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-o-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

30 (2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(5'-o-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Chloro-2-[4-[5'-(2-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl]-pyrimidine, maleate;

35 (2'α, 3'aβ, 5'α, 6'aβ)-5-Chloro-2-[4-(5'-o-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-methanesulfonyl-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-[5'-(3-pyrrolidin-1-ylmethyl-phenyl)-octahydro-pentalen-2'-yl]-piperazine, dimaleate;

5 5-Trimethylstannayl-3,3a,4,6a-tetrahydro-1H-pentalen-2-one, ethylene ketal;

5-(2-Cyano-phenyl)-3,3a,4,6a-tetrahydro-1H-pentalen-2-one;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Cyano-4-{4-[5'-(2-fluoro-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

10 (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-trifluoromethoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-fluoro-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-pyridin-2-yl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, dihydrochloride;

15 (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-m-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-p-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

20 (2'α, 3'aβ, 5'α, 6'aβ)-N-(2-{5'-[4-(5-Fluoro-pyrimidin-2-yl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-phenyl)-acetamide, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-N-(2-{5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-phenyl)-acetamide, maleate;

5-(2-Cyano-phenyl)-3,3a,4,6a-tetrahydro-1H-pentalen-2-one, ethylene ketal;

2-(5-Oxo-octahydro-pentalen-2-yl)-benzamide, ethylene ketal;

25 (2'α, 3'aβ, 5'α, 6'aβ)-2-{5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-benzamide, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

30 (2'α, 3'aβ, 5'β, 6'aβ)-2-Fluoro-4-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-piperazin-1-yl]-pyrimidine;

- (2'β, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-piperazin-1-yl]-pyrimidine;
- (2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydro-3'a,6'a-dimethylspiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-pyrimidine, maleate;
- 5 (2'β, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydro-3'a,6'a-dimethylspiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-pyrimidine, maleate;
- (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;
- (2'α, 3'aβ, 5'β, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;
- 10 (2'α, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-5'-yl)-piperazine, maleate;
- (2'β, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-5'-yl)-piperazine, maleate;
- 15 (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-6-fluoro-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-5'-yl)-1-piperazinyl]-benzonitrile, maleate;
- (2'β, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-6-fluoro-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-5'-yl)-1-piperazinyl]-benzonitrile, maleate;
- (2α,3aβ,5α,6aβ)-5-Benzylamino-hexahydropentalen-2-one, mono -ethylene ketal;
- 20 (2α,3aβ,5α,6aβ)-5-Amino-hexahydropentalen-2-one, mono -ethylene ketal;
- (2α,3aβ,5α,6aβ)-5-(5-Fluoro-2-nitro-phenylamino)-hexahydropentalen-2-one, mono -ethylene ketal;
- (2α,3aβ,5α,6aβ)-5-(2-Amino-5-fluoro-phenylamino)-hexahydropentalen-2-one, mono -ethylene ketal;
- 25 (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(6-fluoro-2-oxo-2,3-dihydro-benzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, dimesylate;
- (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-oxo-2,3-dihydro-benzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, mesylate;
- (2'α, 3'aβ, 5'α, 6'aβ)-1-{5'-[4-(5-Fluoro-pyrimidin-2-yl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-1,3-dihydro-benzoimidazol-2-one, mesylate;
- 30 (2α,3aβ,5α,6aβ)-5-(6-Fluoro-2-methyl-benzoimidazol-1-yl)-hexahydro-pentalen-2-one;
- (2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(6-fluoro-2-methylbenzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, dimesylate;
- (2'α, 3'aβ, 5'α, 6'aβ)-6-Fluoro-2-methyl-1-[5'-(4-phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-1H-benzoimidazole, dimaleate;
- 35

- (2 α ,3 $\alpha\beta$,6 $\alpha\beta$)-5-(1H-Indol-3-yl)-3,3a,4,6a-tetrahydro-1H-pentalen-2-one, mono-ethylene ketal;
- (2' α , 3' $\alpha\beta$, 5' α , 6' $\alpha\beta$)-2-Fluoro-4-{4-[5'-(1H-indol-3-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;
- 5 (2' α , 3' $\alpha\beta$, 5' α , 6' $\alpha\beta$)-3-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-1H-indole, maleate;
- (2 α ,3 $\alpha\beta$,6 $\alpha\beta$)-5-(4-Fluoro-phenoxy)-hexahydro-pentalen-2-one;
- (2' α , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-1-[5'-(4-Fluoro-phenoxy)-octahydro-pentalen-2'-yl]-4-phenyl-piperazine, maleate;
- 10 (2' α , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-2-Fluoro-4-{4-[5'-(4-fluoro-phenoxy)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;
- (2' α , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-5-Fluoro-2-{4-[5'-(4-fluoro-phenoxy)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-pyrimidine, maleate;
- (2' β , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-1-[5'-(4-Fluoro-phenoxy)-octahydro-pentalen-2'-yl]-4-phenyl-piperazine, maleate;
- 15 (2' α , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-2-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-isoindole-1,3-dione maleate;
- (2' α ,3' $\alpha\beta$,5' α ,6' $\alpha\beta$)-5-Hydroxy-hexahydro-pentalen-2-one, ethylene ketal;
- (2' α ,3' $\alpha\beta$,5' α ,6' $\alpha\beta$)-2-Oxo-3-(5-oxo-octahydro-pentalen-2-yl)-2,3-dihydro-
- 20 benzoimidazole-1-carboxylic acid tert-butyl ester, ethylene ketal;
- (2' α ,3' $\alpha\beta$,5' α ,6' $\alpha\beta$)-2-(5-oxo-octahydro-pentalen-2-yloxy)-3H-benzoimidazole-1-carboxylic acid tert-butyl ester, ethylene ketal;
- (2' β , 3' $\alpha\beta$, 5' α , 6' $\alpha\beta$)-3-{5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-2-oxo-2,3-dihydro-benzoimidazole-1-carboxylic acid tert-butyl ester;
- 25 (2' β , 3' $\alpha\beta$, 5' α , 6' $\alpha\beta$)-1-{5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-1,3-dihydro-benzoimidazol-2-one, maleate;
- (2' α , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-2-Fluoro-4-{4-[5'-(2-oxo-2,3-dihydro-benzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;
- (2' β , 3' $\alpha\beta$, 5' α , 6' $\alpha\beta$)-1-{5'-[4-(3,4-Difluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-1,3-dihydro-benzoimidazol-2-one, maleate;
- 30 (2' β , 3' $\alpha\beta$, 5' α , 6' $\alpha\beta$)-2-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yloxy]-1H-benzoimidazole, maleate;
- (2' α ,3' $\alpha\beta$,5' α ,6' $\alpha\beta$)-2-(5-Oxo-octahydro-pentalen-2-yl)-isoindole-1,3-dione;
- (2' α , 3' $\alpha\beta$, 5' β , 6' $\alpha\beta$)-2-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-
- 35 isoindole-1,3-dione, maleate;

(2' α , 3'a β , 5' β , 6'a β)-4-{4-[5'-(1,3-Dioxo-1,3-dihydro-isoindol-2-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-2-fluoro-benzonitrile, maleate;

(2' α , 3'a β , 5' β , 6'a β)-2-{5'-[4-(5-Fluoro-pyrimidin-2-yl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-isoindole-1,3-dione, maleate;

5 (2' β , 3'a β , 5' α , 6'a β)-2-{5'-[4-(3,4-Difluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-isoindole-1,3-dione, maleate;

(2' β , 3'a β , 5' α , 6'a β)-2-{5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-isoindole-1,3-dione, maleate; and,

(2' β , 3'a β , 5' α , 6'a β)-N-[5-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2-yl]-
10 benzamide, maleate.

7. A pharmaceutical composition for treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from neuroleptic agents, neuroleptic malignant syndrome, tardive
15 dyskinesia, nausea, emesis, hyperdermia and amenorrhea in a mammal comprising an amount of a compound according to claim 1 that is effective in treating such condition, and a pharmaceutically acceptable carrier.

8. A method of treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from
20 neuroleptic agents, neuroleptic malignant syndrome, tardive dyskinesia, nausea, emesis, hyperdermia and amenorrhea in a mammal comprising administering to said mammal an amount of a compound according to claim 1 that is effective in treating such condition.

9. A pharmaceutical composition for treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from neuroleptic agents, neuroleptic malignant syndrome, tardive
25 dyskinesia, nausea, emesis, hyperdermia and amenorrhea in a mammal comprising a dopaminergic effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

10. A method of treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from
35 neuroleptic agents, neuroleptic malignant syndrome, tardive dyskinesia, and nausea, emesis, hyperdermia and amenorrhea in a mammal comprising an administering to said mammal a dopaminergic effective amount of a compound according to claim 1.

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11. A pharmaceutical composition for treating a disease or condition, the treatment of which can be effected or facilitated by altering dopamine mediated neurotransmission in a mammal comprising a dopaminergic effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

5 12. A method of treating a disease or condition; the treatment of which can be effected or facilitated by altering dopamine mediated neurotransmission in a mammal comprising administering to said mammal a dopaminergic effective amount of a compound according to claim 1.

10 13. A pharmaceutical composition according to claim 9, wherein the dopaminergic effective amount is a D4 receptor binding effective amount.

14. A pharmaceutical composition according to claim 11, wherein the dopaminergic effective amount is a D4 receptor binding effective amount.

15 15. A method according to claim 10, wherein the dopaminergic effective amount that is administered to said mammal is a D4 receptor binding effective amount.

16. A method according to claim 12, wherein the dopaminergic effective amount that is administered to said mammal is a D4 receptor binding effective amount.

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